Food and Agriculture Organization of the United Nations

DEVELOPMENT OF DATE PALM PRODUCTS AND BY-PRODUCTS VALUE CHAINS IN SUDAN

March 2022

SDGs:	
Country:	Sudan
Project Code:	TCP/SUD/3703
FAO Contribution:	USD 375 000
Duration:	1 December 2019 – 31 December 2021
Contact Info:	FAO Representation in Sudan FAO-SD@fao.org

Implementing Partner

Ministry of Agriculture and Forests (MoAF).

Beneficiaries

Date palm farmers and producers; Palm tree by-products craft makers.

Country Programming Framework (CPF) Outputs

Priority 1: Enabling policy and institutional environment for food security and nutrition; Priority 2: Sustainable agriculture (crops, livestock, fisheries, forestry) and natural resources management.

BACKGROUND

Agriculture is the main source of sustained growth in the Sudan and in 2019 contributed to 30 percent of the gross domestic product. With a large cultivable area, it is claimed that the Sudan has the potential to be the breadbasket of Africa and the Middle East.

In the Sudan, estimations indicate that there are over 8 million date palms, mostly cultivated in the northern region of the country, and the presence of more than 50 local cultivars are documented. In the past years, investments in the date sector have considerably increased due to its significant contribution to food security, income generation and elevation of rural poverty, in addition to its role in combating desertification.

The Sudanese production of dates is estimated at 4 393 55 tonnes, ranking it as the sixth highest date-producing country in the Middle East and Northern Africa, with an annual date production yield of around 11.8 tonnes/ha. However, only 432 tonnes are exported, mainly consisting of semi-dry varieties. Sudan has a good potential for semi-dry varieties, such as the recently introduced variety *Medjool*, which possesses a high potential for exportation. However, despite the growth in the international demand, the contribution of the exportations of the Sudan to the international date market remains low..

New areas of date palm were recently planted by the private sector and smallholder farmers in certain areas of the Sudan, such as Khartoum. However, most of these plantations introduced date palm cultivars from abroad without a prior analysis of their environmental adaptability, marketing potentially and human acceptability. Some of the cultivars, such as *Barhee*, need the utmost care during harvest and post-harvest periods. Other cultivars, such a *Khenaizi* and *Nabut Seif*, are usually consumed fresh and offer low market opportunities.

In addition to the presence of new varieties with little adaptability to the Sudanese environment, the date palm industry faces other important challenges and constraints such as:

- the lack of technical know-how for good production practices of dates;
- the dearth of trained labour force;
- the negative effects of pests and diseases, such as the red palm weevil (RPW), on production;
- the lack of sufficient post-harvest and processing knowledge and facilities;
- the absence of a quality control regime;
- weak market information systems;
- gaps in available and reliable statistics for the date sector;
- a low consumption per capita of dates;
- marketing problems at the national, regional, and international level; and
- the lack of effective value chain linkages for the whole date sector.

In this context, this FAO project aimed to promote a model the development of a date value chain in the country, based on sustainable production, processing and marketing of dates.

In addition, an insufficiency in the use of date by-products by local and traditional craftmakers to produce handicrafts, such as mats and containers, was detected. Therefore this project also proposed to improve the skills of the craft makers on the commercial use of date by-products to create furniture and handcrafts and raise awareness on the value of date palm by-products among the business sectors and policy makers.

This project's objectives supported the national strategies and contributed to the national development plan to develop the agriculture sector.

Impact

By enabling an enhanced and dynamic environment for date palm products and by-products, this project has positive effects on the livelihoods and food security of rural population and therefore contributes to Sustainable Development Goal (SDG) 2 that aims at ending hunger by 2030. By improving income generation and export earnings, thus generating economic opportunities, this project also contributes to SDG 1 that aims at ending poverty.

Achievement of results

Thanks to its technical support and knowledge transfer, FAO contributed to fostering a sustainable production of date palm products and by-products in the Sudan.

Under this project, an action plan for the development of the date palm sector in partnership with producers associations and private sector was drafted. A study to estimate the planted area was carried out by the Ministry of Agriculture and Forests (MoAF), the Agricultural Research Corporation (ARC) and the Date Palm Producers Association. An FAO expert conducted site visits to selected production sites in the North State, River Nile State and Khartoum State and identified gaps in the date palm value chain.

Knowledge on date palm production, collection and handling, packing and processing was transferred to enhance the investment of small producers and the private sector along the value chain. High quality varieties and international palm cultivars that have potential markets were identified and guidelines for the choice of cultivars in new plantations and for their production were developed. In collaboration with the private sector, best practices in harvest and post-harvest operations of date were identified and guidelines, including recommended technology for date palm processing and packaging, were developed.

In collaboration with the MoAF, this project improved the linking of producers through the establishment of ten producer organizations (POs). They received technical equipment, as well as trainings on the legal, regulatory and management aspects of the trading organisations, such as access to market, value chains, building partnership and leadership development. FAO designed training manuals and knowledge products on the date palm value chain, as well as customized learning programmes in collaboration with the "Khalifa International Award for Date Palm and Agricultural Innovation," to promote skillsets in various technical areas for POs. In addition, the two organizations worked together to organize in-country exchanges to learn from best practices.

A pest management programme, with a focus on date diseases, and in particular the RPW, was established and training sessions aiming at reducing pre-harvest losses and quality degradation from pest and diseases were conducted.

Finally, FAO collaborated with the Sudanese Dates Palm Society to train 20 craft makers on the use of date by-products to build furniture and handicrafts.

Implementation of work plan and budget

A project steering committee of sixteen members, coordinated by the undersecretary of the MoAF, was formed and convened on a regular basis to assess project operational challenges.

The COVID-19 pandemic and the associated restrictive measures impacted the implementation of this project. The procurement of some items from aboard and the delivery of some trainings in the field were delayed. Consequently, the length of the project was extended to allow the completion of the activities. In addition, travel restrictions impeded the arrival of international experts to the Sudan, and in-country and abroad field visits were subsequently cancelled. Nevertheless, all other activities were eventually implemented.

The budget initially allocated for this project was repeatedly increased to finance additional experts' missions and the procurement of technical equipment.

Follow-up for government attention

While a national action plan to develop the date palm industry and its pathways to international markets was drafted, subsequent consultations are required to officially endorse this plan. The recommendations stemming from the findings of the assessment on the date palm tree sector situation, carried out together with the private sector and POs, will help in this exercise. In addition, capacity development of the POs needs to be continued.

The results of this project prompted regional donors, such as the Khalifa International Award for Dates Palm, to commit to future financial support to the date palm sector development in the Sudan.

SUSTAINABILITY

1. Capacity development

The effective training of governmental personnel and private sector stakeholders improved resource capacities at the national level. This availability of skilled individuals at the organisation level throughout the country is a long-term asset to the national capability of the agriculture sector.

The development of knowledge among the POs ensured the viability of the project's results. Ten POs were linked to national financial institutions and the private sector to ensure productive partnership building and networking that will ensure sustainability.

To ensure the long-term sustainability of the local retraining programme, the project invested in training of trainers. A five-day training workshop for date palm POs and government employees was held, with an emphasis on capacity building in date palm production, protection, and post-harvest activities.

The project followed a participatory approach in developing guides on good agriculture practices (GAPs) for date palm production, processing of palm tree products and integrated pest management (IPM) of date palm pests. Adequate irrigation, fertilization, trimming, and pollination, thinning, harvesting, cold chain management, and packing processes were among the GAPs implemented.

2. Gender equality

The project activities were gender sensitive and in line with FAO's policy for equitable participation of women in decision-making, access to and control over decent employment, income, land and other productive resources, goods, services and markets, and the reduction of women's work burden. Under this project, women were equally given the chance in the decision-making process and productive assets were distributed among them to contribute to their household food security and increase their incomes. In total, women made up one-third of the project's beneficiaries. The project also promoted the establishment of gender-sensitive POs.

3. Environmental sustainability

All the executed activities were environmentally friendly, particularly the application of an IPM approach, which is an ecosystem approach to crop production and protection that combines different management strategies and practices to grow healthy crops and minimize the use of pesticides.

4. Human Rights-based Approach (including Right to Food and Decent Work)

Through proper management of the date palm resources and the guarantee of secured livelihoods, this project contributed to the Right to Food and Decent Work.

5. Technological sustainability .

The project used appropriate intermediate technologies such as injection tools for IPM management, thinning and pollination equipment, ladders for harvesting and threshing equipment. These items are affordable and can be easily accessed and adopted by the farmers. Innovative technologies, such as IPM, for the management of post-harvest operations to improve the production and productivity of date palm were adopted through intensive training programmes.

6. Economic sustainability

The project created economic opportunities for the date palm farmers and producers that will benefit from an integrated and enabling environment for the date production. In addition, local craft makers will benefit from their knowledge in the use of local affordable materials to improve and ensure their livelihoods: making furniture and handicrafts from date by-products and selling them will diversify their income sources and potentially create new jobs in rural areas.

DOCUMENTS AND OUTREACH PRODUCTS

Documents

- **FAO Regional Office for Near East and North Africa.** 2021. *Date palm green pit scale insect, integrated pest management (IPM)*.
- **FAO Sudan.** 2021. *Characterization of date palm sector in Sudan: socio-economic and technology adoption perspective*.
- **FAO Sudan.** 2021. *Development of date palm products and by-products value chain in Sudan*.

Outreach Products

- **FAO Sudan.** Booklet on date palm by-products. 2021.
- **FAO Sudan.** Booklet on date palm fertilization. 2021.
- **FAO Sudan.** Booklet on date palm insemination. 2021.
- **FAO Sudan.** Booklet on date palm irrigation methods. 2021.
- **FAO Sudan.** Booklet on post-harvest operation of date palm. 2021.
- **FAO Sudan.** Booklet on pruning and cleaning of date palm. 2021.
- **FAO Sudan.** Booklet on Sudanese date palm varieties. 2021.
- **FAO Sudan.** Booklet on trimming of date palm branches. 2021.

ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	**Enabling environment for date palm products and by-products enhanced for improved food security, income generation and export earnings**		
Outcome	Improved capacities for research, extension, and knowledge transfer to foster sustainable production of date palm products and by-products		
	Indicator	Application/ use of the project recommendations/ updated knowledge/ production technology relevant to the date palm sector in different practices in Sudan	
	Baseline	N/A	
	End Target	Application on a broad way of the project's recommendations, new technologies, and knowledge by the different stakeholders/farmers in addition to those trained during the project.	
	Comments and follow-up action to be taken	The project successfully provided a full technical package for the farmers on marketing, IPM, post-harvest operations and production and productivity of quality dates. The project has further prepared handouts in the different disciplines to serve as reference for the beneficiaries.	
Output 1	National action plan for development of the date palm sector in partnership with producers associations and private sector developed for improved markets, food security and income generation		
	Indicators	Target	Achieved
	National action plan developed and validated.	1	Yes
Baseline	0		
Comments	An action plan was developed and validated for the date palm sector in partnership with producers associations and the private sector for improved markets, food security and income generation.		
Activity 1.1	Conduct a study to estimate planted area with date palm trees		
	Achieved	Yes	
	Comments	The MoAF, Agricultural Research Corporation and Date Palm Producers Association conducted an assessment to estimate planted area with date palm trees in main production zones of the Sudan. The data will serve as a roadmap for the promotion of the dates palm sector in the Sudan.	
Activity 1.2	Conduct an assessment on the current situation of the date palm industry in Sudan		
	Achieved	Yes	
	Comments	National consultants conducted site visits to selected production sites in North State, River Nile State and Khartoum State. The visits aimed to identify gaps in the date palm value chain. An assessment report was prepared, discussed and validated during a stakeholder consultation meeting.	
Activity 1.3	Develop and validate action plan to develop the date palm industry and pathways to international markets		
	Achieved	Yes	
	Comments	Based on the findings of an assessment of the date palms, a draft national action plan to develop the date palm industry and pathways to international markets was drafted.	

Output 2	Knowledge on date palm production, collection and handling, packing and processing, produced and disseminated to enhance investment by small producers and the private sector along the value chain		
	Indicators	Target	Achieved
	Number of guidelines, best practice, and advocacy materials produced and number of seminars conducted.	Twelve technical packages for dates production, guidelines for the choice of new cultivars, guidelines for harvest and post-harvest of dates, guidelines and standards for processing and packaging, and seminars at national and state levels.	Yes
Baseline	0		
Comments	The materials are adopted by the national authorities and disseminated to the relevant parties. Some materials were disseminated among universities to serve as references for the students.		
Activity 2.1	Identify high quality varieties and international palm cultivars that have potential markets, and develop related guidelines.		
	Achieved	Yes	
	Comments	In collaboration with the research and the private sectors, local and international promising date palm varieties were identified. Guidelines for the choice of cultivars in new plantations were developed. A technical package for the production of dates by small producers and by private investors was made available.	
Activity 2.2	Identify best practices in harvest and post-harvest operations of date palm, and develop related guidelines		
	Achieved	Yes	
	Comments	In consultation with the date producers, as well as the research and private sectors, FAO supported the identification of best practices in harvest and post-harvest operations of date palm, and developed related guidelines.	
Activity 2.3	Develop guidelines for date palm processing and develop standards for date palm packaging		
	Achieved	Yes	
	Comments	In collaboration with the private sector, guidelines, including recommended technology for date palm processing and packaging, were developed.	
Output 3	Capacities of date producers to meet market needs improved		
	Indicators	Target	Achieved
	Number of producer associations formulated and trained.	10	Yes
Baseline	0		
Comments	Ten producer organizations were established and capacitated through tailor-made organizational and technical training programmes. A hands-on training session was held for POs to improve their knowledge of various cultural practices such as harvesting, IPM, and post-harvest. An assortment of equipment, including one high power pressure sprayer, one motorized palm harvester, one knapsack sprayer, a telescopic ladder, pheromone traps, one palm leaf chipper shredder, and one electric drill, was purchased and distributed to POs.		
Activity 3.1	Support establishment of date palm producers associations to establish linkages with date processors, traders and exporters		
	Achieved	Yes	
	Comments	In collaboration with the Ministry of Agriculture, ten producer organizations were established and registered in alignment with the law of 201l. The capacitation of the POs needs to continue.	
Activity 3.2	Training for producer associations		
	Achieved	Yes	
	Comments	The established producer associations received trainings on the legal, regulatory and management aspects of the trading organisations, including access to market, value chains, building partnership and leadership development.	
Activity 3.3	Conduct in-country and abroad field visits		
	Achieved	No	
	Comments	Due to the COVID-19 travel restrictions, this activity was not achieved.	

Output 4	Pest management programme with focus on Red Palm Weevil (RPW) established		
	Indicators	Target	Achieved
	Training on RPW management.	50 trainees.	Yes
Baseline	0		
Comments	The national consultant for IPM delivered training for 50 trainees on RPW management and relevant guidelines were disseminated. The green scale insect as a serious pest in Sudan was also investigated and an extension brochure was prepared.		
Activity 4.1	Establishment of a pest management programme focused on control of red palm weevil		
	Achieved	Yes	
	Comments	A capacity building programme aimed to reduce pre-harvest losses and quality degradation from pest and diseases was designed.	
Activity 4.2	Conduct training on date diseases and pest management (mainly RPW)		
	Achieved	Yes	
	Comments	Training courses were conducted on IPM/RPW in selected date producing regions. Brochures and posters were prepared and disseminated to the trainees.	
Output 5	Technology and knowledge on development of date by-products transferred from Egypt to Sudan for improved skills of craft-makers to build furniture and handicrafts from date by-products		
	Indicators	Target	Achieved
	Training on hand-craft from date palm by-products.	20 craft-makers.	Yes
Baseline	0		
Comments	The craft-makers training was implemented by the Sudanese Dates Palm Society instead of an Egyptian company due to the COVID-19 travel restrictions. Twenty craft makers received an intensive training programme on date palm by-product management and craft making.		
Activity 5.1	Organize training workshop for twenty craft-makers in Sudan		
	Achieved	Yes	
	Comments	FAO facilitated a training workshop delivered by the Sudanese Dates Palm Society for 20 craftmakers.	
Activity 5.2	Conduct practical courses for furniture or handicrafts made by participants of Activity 5.1		
	Achieved	Yes	
	Comments	FAO supported practical courses delivered by the Sudanese Dates Palm Society for skills building for twenty craft makers.	
Activity 5.3	Conduct two awareness raising seminars		
	Achieved	Yes	
	Comments	One awareness-raising seminar for date palm producers conducted. The furniture and handicrafts completed were displayed during the seminar. One awareness-raising seminar for policy makers and researchers conducted by national consultants.	

Partnerships and Outreach
For more information, please contact: Reporting@fao.org

Food and Agriculture Organization of the United Nations
Viale delle Terme di Caracalla
00153 Rome, Italy

©FAO, 2022
CC1032EN/1/07.22